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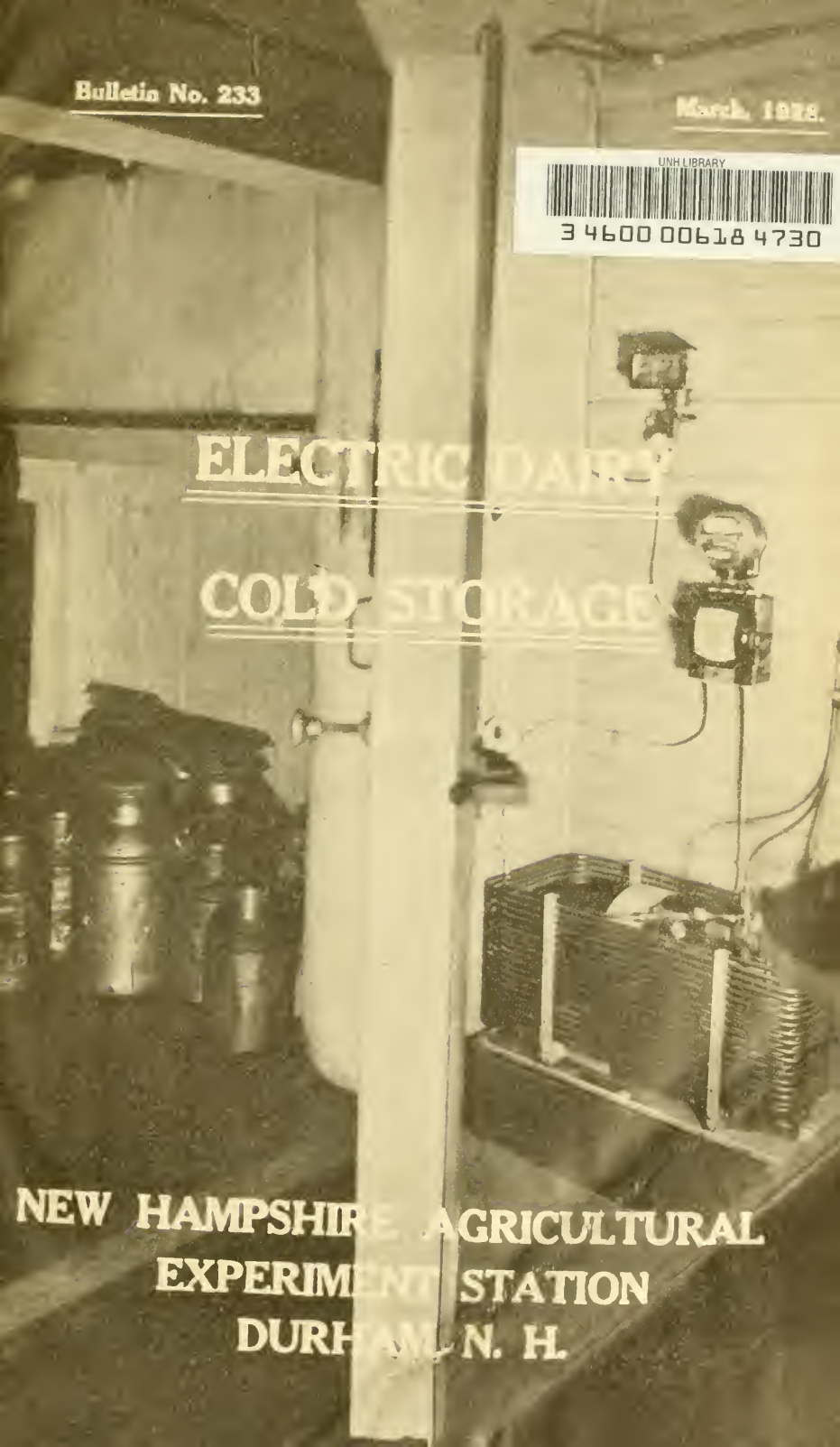

NEW HAMPSHIRE AGRICULTURAL
EXPERIMENT STATION
DURHAM, N. H.

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INSPECTION OF COMMERCIAL FERTILIZERS

MADE FOR THE STATE DEPARTMENT OF AGRICULTURE

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Andrew L. Felker, Commissioner of Agriculture. The state inspector, Mr. Eugene D. Sanborn, collected samples of 117 brands of fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1929. The general character of the fertilizer materials collected is shown by the following classification:

Complete fertilizer	94
Nitrogen and superphosphate	1
Nitrate of Soda	4
Ground bone	6
Natural manures	6
Superphosphate (acid phosphate)	4
Tankage	1
Basic slag	1
	117

THE FERTILIZER LAW

The New Hampshire fertilizer law applies to all fertilizer materials offered for sale, whether mixed materials in the form of complete fertilizers or unmixed materials as superphosphate (acid phosphate), nitrate of soda, ground bone, tankage, etc. Under the provisions of the law every manufacturer or dealer who shall sell or offer for sale any fertilizer material shall furnish with each lot or package a clearly printed statement certifying the brand name under which it is sold, the name and address of the manufacturer, the number of net pounds the package contains and a chemical analysis stating the minimum percentages of nitrogen, of total phosphoric acid, of available phosphoric acid and of water soluble potash. No person shall sell or offer for sale any pulverized leather, hair or wool waste, peat, garbage tankage, or any inert material whatsoever, without an explicit printed statement of the fact conspicuously fixed to every package of such material.

The state official in charge of the administration of the fertilizer law is the Commissioner of Agriculture.

In Table I are given the grades of complete fertilizers collected, the number of brands found in each grade, the average analysis of each grade and the average retail price per ton.

TABLE I

Formula	Number of brands	Average per cent nitrogen	Average per cent total phosphoric acid	Average per cent available phosphoric acid	Average per cent water soluble potash	Average retail price per ton
0.82—9—4	3	1.04	9.95	9.18	4.02	$43.33
0.82—10—3	1	0.97	10.93	10.28	3.06	45.00
1.65—8—2	3	1.85	8.99	8.24	2.24	35.67
1.65—8—10	2	1.65	8.76	7.90	10.23	42.50
1.65—9—3	4	1.78	10.01	9.32	3.16	45.00
1.65—10—2	3	1.96	11.31	10.63	2.34	44.00
1.65—10—4	1	1.75	11.10	10.32	4.00	47.00
1.65—12—4	4	1.88	12.73	12.00	4.23	46.00
2.47—8—4	8	2.58	8.99	8.15	4.13	38.75
2.47—8—6	1	2.56	10.29	9.43	6.17	65.00
2.47—8—10	1	2.67	8.85	8.00	10.00	57.00
2.47—10—4	1	2.69	10.77	10.00	4.04	45.00
2.47—10—6	2	2.92	9.88	9.08	7.17	44.00
3.29—6—10	10	3.29	6.85	6.26	9.96	48.00
3.29—8—4	12	3.45	9.20	8.55	4.16	44.25
3.29—8—6	1	3.29	8.97	8.35	6.42	49.00
3.29—8—7	1	3.38	8.66	8.00	7.24	45.00
3.29—8—10	1	3.67	8.99	8.00	10.19	60.00
3.29—12—4	1	3.30	12.98	12.42	4.11	120.00
3.29—16—4	1	3.29	16.15	15.84	4.08	52.00
4—8—8	1	4.38	8.95	8.14	8.09	45.00
4—12—4	1	4.21	12.79	12.29	4.10	48.00
4.11—8—7	12	4.19	8.98	8.24	7.04	49.33
4.11—10—5	1	3.91	10.50	9.75	5.23	49.00
4.93—6—4	1	4.94	6.73	6.28	4.00	50.00
4.93—8—5	1	4.80	10.40	9.32	5.01	65.00
4.93—8—7	1	5.11	8.96	8.43	7.07	.....
4.93—10—4	1	4.94	10.98	10.30	4.00	.....
5.76—6—5	3	5.52	6.85	6.31	5.12	51.33
5.76—8—6	1	5.53	9.48	8.00	7.04	54.00
6—8—6	1	5.69	8.96	8.58	6.32	50.00
6—15—9	1	6.00	15.93	15.26	8.86	34.20
6.58—6—6	2	6.43	7.11	6.63	6.29	53.00
8—16—16	1	8.00	16.25	15.58	16.68	60.00
8.22—3—8	1	8.22	8.79	5.71	8.14	90.00
8.22—3.50—8	1	8.22	3.91	3.77	8.12	80.00
8.22—16—14	2	7.64	16.09	15.63	13.22	78.50
10—20—15	1	9.80	20.71	20.39	15.69	90.00

CONFORMITY TO GUARANTEE

Thirty-eight of the 117 brands analyzed were found to contain less than the guarantee of one or more of the three constituents. The total number of guarantees on the 117 brands was 432, the total number of deficiencies 53, the per cent deficient 12.3. This shows some improvement over

last year when the corresponding per cent was 19.6. Many of the deficiencies were comparatively negligible, the small deficiency in one constituent being offset in value by overrun in other constituents.

A detailed summary of the deficiencies in the 38 brands which failed to meet their guarantees follows:

	Brands	Total Deficiencies
Nitrogen, total phosphoric acid, available phosphoric acid and potash	1	4
Nitrogen, total phosphoric acid and potash	1	3
Nitrogen, available phosphoric acid and potash	0	0
Nitrogen, total phosphoric acid and available phosphoric acid	0	0
Nitrogen and total phosphoric acid	1	2
Nitrogen and available phosphoric acid	1	2
Nitrogen and potash	2	4
Nitrogen	18	18
Total phosphoric acid, available phosphoric acid and potash	0	0
Total phosphoric acid and potash	0	0
Available phosphoric acid and potash	1	1
Potash	2	2
Total phosphoric acid and available phosphoric acid	6	12
Total phosphoric acid	1	1
Available phosphoric acid	4	4
	38	53

NITROGEN DEFICIENCIES

One hundred twelve brands were guaranteed to contain nitrogen in amounts varying from 0.82 per cent to 10 per cent. Twenty-four failed to meet the guarantee. The amounts of the deficiencies were 0.05 per cent; 0.05 per cent; 0.08 per cent; 0.11 per cent; 0.11 per cent; 0.11 per

cent; 0.11 per cent; 0.11 per cent; 0.12 per cent; 0.13 per cent; 0.14 per cent; 0.16 per cent; 0.18 per cent; 0.20 per cent; 0.20 per cent; 0.20 per cent; 0.20 per cent; 0.22 per cent; 0.22 per cent; 0.28 per cent; 0.31 per cent; 0.50 per cent; 0.62 per cent; 0.68 per cent. One-half of the deficiencies was less than 0.20 per cent. These deficiencies decrease the commercial valuation of the fertilizers less than $1.00 per ton. The greatest deficiency, 0.68 per cent, is equivalent to approximately $3.50 per ton.

PHOSPHORIC ACID DEFICIENCIES

One hundred thirteen brands were guaranteed to contain phosphoric acid. Sixteen brands failed to meet their guarantees. Three were deficient in total phosphoric acid, six in available phosphoric acid and seven in both total and available phosphoric acid. The deficiencies in total phosphoric acid were 0.16 per cent; 0.18 per cent; 0.25 per cent; 0.28 per cent; 0.33 per cent; 0.35 per cent; 0.49 per cent; 0.68 per cent; 0.81 per cent; 1.36 per cent. The deficiencies in available phosphoric acid were 0.16 per cent; 0.20 per cent; 0.23 per cent; 0.25 per cent; 0.28 per cent; 0.32 per cent; 0.42 per cent; 0.50 per cent; 0.59 per cent; 0.74 per cent; 1.52 per cent; 1.61 per cent; 3.13 per cent. A deficiency of 3.13 per cent available phosphoric acid is equivalent to approximately $5.00 per ton.

POTASH DEFICIENCIES

One hundred samples were guaranteed to contain potash. Seven failed to meet the guarantee. The amounts of the deficiencies were 0.14 per cent; 0.19 per cent; 0.19 per cent; 0.31 per cent; 0.39 per cent; 0.66 per cent; 1.56 per cent. The greatest deficiency is equivalent to about $1.50 per ton.

In the tabulation of the analyses in the following pages deficiencies of two-tenths of one per cent or more are shown in Italics. The names of the manufacturers are arranged alphabetically, and under the manufacturer the different brands are arranged alphabetically or numerically by formula.

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
American Agricultural Chemical Co. **New York City**								
Agrico For Aroostook	4.94	5.11	8.50	8.96	8.00	8.43	7.00	7.07
Agrico For Corn	2.47	3.38	10.50	*9.14*	10.00	*8.39*	6.00	8.02
Agrico For Potatoes	3.29	3.29	8.50	8.97	8.00	8.35	6.00	6.42
Agrico For Truck	4.11	*3.91*	10.50	10.50	10.00	*9.75*	5.00	5.23
Aroostook Potato Manure	4.11	4.18	8.50	8.94	8.00	8.00	7.00	7.04
Bowker's All Round Fertilizer	2.47	2.47	8.50	8.63	8.00	8.37	4.00	4.00
Bowker's Market Garden Fertilizer	3.29	3.44	8.50	8.95	8.00	8.40	4.00	4.03
Bowker's Potato and Vegetable Phosphate	1.65	1.65	9.50	9.86	9.00	9.48	3.00	3.00
Bowker's Square Brand Corn and Grain Fertilizer	1.65	1.65	8.50	8.70	8.00	8.12	2.00	2.06
Bowker's Stockbridge Early Crop Manure	4.11	4.56	8.50	8.80	8.00	8.00	7.00	7.00
Bowker's Stockbridge Potato and Vegetable Manure	3.29	3.15	6.50	6.77	6.00	6.30	10.00	9.81
Bowker's Sure Crop Fertilizer	0.82	0.97	9.50	9.90	9.00	9.10	4.00	4.01
Bradley's Complete Manure with 10% Potash	3.29	3.44	6.50	6.98	6.00	6.40	10.00	10.06
Bradley's Corn Phosphate	1.65	1.81	8.50	9.07	8.00	8.59	2.00	2.40
Bradley's Eclipse Fertilizer	0.82	1.12	9.50	9.77	9.00	9.00	4.00	4.00
Bradley's Potato Fertilizer	1.65	1.82	9.50	10.13	9.00	9.33	3.00	3.13
Bradley's Potato Manure	2.47	2.31	8.50	8.64	8.00	8.00	4.00	4.00
Bradley's X L Super-Phosphate of Lime	2.47	2.69	10.50	10.77	10.00	10.00	4.00	4.04
Corn Favorite	2.47	2.47	10.50	10.63	10.00	*9.77*	6.00	6.32
Double Strength Fertilizer	8.25	*7.75*	16.50	16.50	16.00	16.00	14.00	14.00

AMERICAN AGRICULTURAL CHEMICAL CO.—*Continued*								
Farmer's Friend Fertilizer	1.65	1.85	12.50	12.83	12.00	12.08	4.00	4.20
General Crop Fertilizer	1.65	1.84	9.50	9.87	9.00	9.06	3.00	3.34
Grass and Lawn Top Dressing	4.94	4.94	6.50	6.73	6.00	6.28	4.00	4.00
Lister's Corn and Potato Fertilizer	1.65	1.79	9.50	10.18	9.00	9.40	3.00	3.19
Monarch Fertilizer	3.29	3.45	8.50	8.86	8.00	8.41	4.00	4.33
Nitrate of Soda	15.22	15.90	.....	.....	.....	.....	.....	.....
Peerless Potato Manure	3.29	3.38	8.50	8.66	8.00	8.00	7.00	7.24
Prolific 10% Potash Fertilizer	1.65	1.67	8.50	8.65	8.00	*7.80*	10.00	10.04
Pulverized Sheep and Goat Manure	1.23	1.18	0.50	0.67	.....	.....	2.00	2.03
Special Grass Top Dressing	6.58	6.47	6.50	7.04	6.00	6.39	6.00	6.52
Special Ground Bone	2.47	2.98	22.88	25.36	.....	.....	.....	.....
16% Superphosphate	.....	.....	16.50	17.20	16.00	16.90	.....	.....
AMERICAN CYANAMID CO. New York City								
Ammo-Phos-Ko No. 2	10.00	*9.80*	.....	20.71	20.00	20.39	15.00	15.69
APOTHECARIES HALL CO. Waterbury, Conn.								
Liberty Corn and All Crops 2—8—2	1.64	2.09	8.00	9.22	8.00	8.00	2.00	2.27
Liberty Corn Fruit and All Crops 2—12—4	1.64	2.21	12.00	12.79	12.00	*11.68*	4.00	4.37
Liberty High Grade Market Gardeners 5—8—7	4.11	4.11	8.00	9.18	8.00	8.00	7.00	7.00
Liberty Lawn Fertilizer	3.29	4.19	.....	11.49	4.00	5.21	.....	.....
Liberty Potato Fertilizer 4—6—10	3.29	3.44	6.00	6.97	6.00	6.25	10.00	10.38
Liberty Potato and General Crops 4—8—10	3.29	3.67	8.00	8.99	8.00	8.00	10.00	10.19
Liberty Potato and Market Gardeners' Special 4—8—4	3.29	3.29	8.00	9.79	8.00	8.67	4.00	4.02
Liberty Potato and Vegetable 2—8—10	1.64	1.64	8.00	8.87	8.00	8.00	10.00	10.43
Liberty Special Fertilizer for Fruit 7—8—6	5.75	*5.53*	8.00	9.48	8.00	8.00	6.00	7.04
Liberty Top Dresser 10—3.50—8	8.22	8.22	3.50	3.91	3.50	3.77	8.00	8.12
Superphosphate (Acid Phosphate)	.....	.....	17.00	17.64	16.00	17.01	.....	.....

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Armour Fertilizer Works Carteret, N. J.								
Armour's Fertilizer 2—12—4	1.65	1.78	12.50	12.77	12.00	12.15	4.00	4.21
Armour's Fertilizer 4—6—10	3.29	3.18	6.50	6.81	6.00	6.37	10.00	10.00
Armour's Fertilizer 4—16—4	3.29	3.29	16.50	*16.15*	16.00	15.84	4.00	4.08
Armour's Fertilizer 5—8—7	4.11	4.00	8.50	8.71	8.00	8.34	7.00	7.00
Armour's Fertilizer 8—6—6	6.58	6.40	6.50	7.19	6.00	6.87	6.00	6.07
Atmospheric Nitrogen Corp. Hopewell, Va.								
Arcadian Superfine Nitrate of Soda	16.25	*16.03*	.....	.....	.....	.....	.....	.....
Breck & Sons Boston, Mass.								
Pulverized Sheep Manure, Ram's Head Brand	1.46	1.79	0.75	1.01	.....	.....	3.00	*2.69*
Burlington Rendering Co. Burlington, Vt.								
Burlington 2—10—2 Fertilizer	1.64	1.77	11.00	11.54	10.00	11.21	2.00	2.29
Burlington 4—8—4 Fertilizer	3.28	3.40	9.00	9.00	8.00	8.43	4.00	4.22
Burlington 7—6—5 Fertilizer	5.74	*5.12*	7.00	*6.51*	6.00	6.00	5.00	5.00

CONSOLIDATED RENDERING CO. Boston, Mass.								
16% Acid Phosphate	.....	.....	17.00	17.82	16.00	16.32	.....	.....
Corenco Double Strength 10—16—14	8.22	*7.54*	16.50	*15.69*	16.00	*15.26*	14.00	*12.44*
Corenco Sheep Manure	1.23	1.59	0.50	0.60	.....	.....	2.00	2.09
Ground Bone	2.46	3.26	22.90	26.68	.....	.....	.....	.....
Nitrate of Soda	15.22	15.28	.....	.....	.....	.....	.....	.....
JOHN C. DOW CO. Boston, Mass.								
Dow's Pure Ground Bone	2.00	*1.72*	24.00	29.36	10.00	12.23	.....	.....
EASTERN STATES FARMER'S EXCHANGE Springfield, Mass.								
Eastern States 4—8—8	4.00	4.38	8.25	8.95	8.00	8.14	8.00	8.09
Eastern States 4—12—4	4.00	4.21	12.50	12.79	12.00	12.29	4.00	4.10
Eastern States 6—8—6	6.00	*5.69*	8.25	8.96	8.00	8.58	6.00	6.32
Eastern States 6—15—9 Fertilizer	6.00	6.00	15.50	15.93	15.00	15.26	9.00	8.86
Eastern States 8—16—16 Fertilizer	8.00	8.00	16.50	*16.25*	16.00	*15.58*	16.00	16.68
Eastern States Fine Bone Meal	2.50	*2.30*	23.00	24.86	.....	.....	.....	.....
Eastern States Nitrate of Soda	15.00	15.23	.....	.....	.....	.....	.....	.....
Eastern States Superphosphate	.....	.....	16.50	17.51	16.00	16.39	.....	.....
ESSEX FERTILIZER CO. Boston, Mass.								
Essex Complete Manure 5—8—7	4.10	4.02	8.50	8.84	8.00	8.14	7.00	*6.61*
Essex Fish Fertilizer 3—8—4	2.46	2.62	8.50	8.94	8.00	8.05	4.00	4.30
Essex Market Garden 4—8—4	3.28	3.30	8.50	9.18	8.00	8.53	4.00	4.09
Essex Peerless Potato Manure 4—6—10	3.28	3.28	6.50	6.66	6.00	6.02	10.00	10.11
INTERNATIONAL AGRICULTURAL CORP. Woburn, Mass.								
Basic Slag	.....	.....	18.00	*17.67*	14.40	*13.88*	.....	.....
International Crop Grower 5—8—7	4.12	4.01	8.50	8.70	8.00	8.16	7.00	7.08

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
International Agricultural Corp.—*Continued*								
International Fertilizer 4—6—10	3.30	*3.10*	6.50	6.34	6.00	6.18	10.00	*9.34*
International General Favorite 3—8—4	2.50	2.50	8.50	8.50	8.00	8.00	4.00	4.02
International Ideal 4—8—4	3.30	3.30	8.50	8.32	8.00	8.00	4.00	4.38
International New England Special 2—12—4	1.65	1.68	12.50	12.52	12.00	12.08	4.00	4.16
Lowell Fertilizer Co. Boston, Mass.								
Lowell Animal Brand 3—8—4	2.46	2.58	9.00	*8.72*	8.00	*7.50*	4.00	4.14
Lowell Bone Fertilizer 2—10—2	1.64	1.98	10.50	11.34	10.00	10.69	2.00	2.18
Lowell Corn and Vegetable 4—8—4	3.28	3.81	8.50	9.73	8.00	9.07	4.00	4.42
Lowell Market Garden Manure 5—8—7	4.10	4.44	8.50	8.68	8.00	8.00	7.00	7.32
Lowell Potato Grower 4—6—10	3.28	3.40	6.50	6.50	6.00	6.00	10.00	10.00
Lowell Top Dressing 7—6—5	5.76	5.82	6.50	7.33	6.00	6.92	5.00	5.16
Maine Farmer's Exchange Portland, Me.								
Produce More 4—6—10	3.30	3.35	6.50	8.17	6.00	7.33	10.00	10.00
Produce More 4—8—4	3.30	3.60	8.50	9.01	8.00	8.33	4.00	4.00
Manchester Rendering Co. Manchester, N. H.								
Manchester Animal Brand Fertilizer 5—8—7	4.10	4.10	9.00	9.36	8.00	8.00	7.00	7.00
Manchester Special Fertilizer	2.46	2.48	9.00	9.53	8.00	8.41	4.00	4.04
Tankage	7.75	7.84	.....	10.99	8.00	*4.87*	.....	.....

Merrimack Farmer's Exchange **Concord, N. H.**								
Merrimack 2—10—2	1.64	2.13	10.50	11.06	10.00	10.00	2.00	2.54
Merrimack 3—8—4	2.46	2.88	8.50	9.44	8.00	8.40	4.00	4.12
Merrimack 4—6—10	3.28	3.28	6.50	6.51	6.00	*5.72*	10.00	9.81
Merrimack 4—8—4	3.28	3.62	8.50	9.56	8.00	8.95	4.00	4.30
Merrimack 5—8—7	4.10	4.10	8.50	8.52	8.00	8.11	7.00	7.00
Merrimack Top Dressing 7—6—5	5.74	5.63	6.50	6.70	6.00	6.00	5.00	5.19
New England Fertilizer Co. **Boston, Mass.**								
New England Complete Manure 4—6—10	3.28	3.28	6.50	6.78	6.00	6.00	10.00	10.09
New England Market Garden Manure 5—8—7	4.10	4.10	8.50	9.21	8.00	8.43	7.00	7.00
New England Potato and Vegetable Manure 4—8—4	3.28	3.60	8.50	9.05	8.00	8.12	4.00	4.13
New England Super 3—8—4	2.46	2.81	8.50	9.51	8.00	8.46	4.00	4.40
New England Rendering Co. **Brighton, Mass.**								
Ground Bone	2.03	2.09	25.17	28.34				
Premier Poultry Manure Co. **Chicago, Ill.**								
Premier Brand Pulverized Poultry Manure	4.93	5.50	2.75	*2.07*	2.50	*1.91*	1.30	2.61
Premier Brand Pulverized Sheep Manure	1.64	1.91	1.00	1.00			2.00	2.14
The Pulverized Manure Co. **Chicago, Ill.**								
Wizard Brand Sheep Manure	2.00	1.95		1.78	1.25	1.25	2.00	2.31

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Rogers and Hubbard Co. **Portland, Conn.**								
Corn and Grain Fertilizer	0.82	0.97	10.50	10.93	10.00	10.28	3.00	3.06
High Potash Fertilizer	2.46	2.67	8.50	8.85	8.00	8.00	10.00	10.00
Potato Fertilizer	1.64	1.75	10.50	11.10	10.00	10.32	4.00	4.00
Rogers and Hubbard 4—8—4 Fertilizer	3.30	3.34	8.00	9.81	8.00	9.09	4.00	4.00
Rogers and Hubbard 5—8—7 Fertilizer	4.11	3.99	8.00	9.43	8.00	8.94	7.00	7.19
Rogers and Hubbard Oats and Top Dressing	8.22	8.22	8.00	8.79	3.00	5.71	8.00	8.14
Soluble Corn and General Crops Manure	2.46	2.56	10.00	10.29	8.00	9.43	6.00	6.17
Soluble Potato Manure	4.93	4.80	10.00	10.40	8.00	9.32	5.00	5.01
Strictly Pure Fine Bone	3.29	4.04	20.50	23.50	.....	.....	.....	.....
Swift & Co. **Baltimore, Md.**								
Vigoro	3.29	3.30	12.30	12.98	12.00	12.42	4.00	4.11
Tennessee Copper & Chemical Corp. **New York City**								
Loma	4.93	4.94	10.65	10.98	10.00	10.30	4.00	4.00
Virginia-Carolina Chemical Corp. **New York City**								
V—C Aroostook Potato Grower	4.11	4.66	9.00	9.34	8.00	8.79	7.00	7.24
V—C Star Brand Fertilizer	0.82	1.02	10.00	10.18	9.00	9.44	4.00	4.06
V—C XXXX Fish & Potash	3.29	3.29	9.00	9.20	8.00	8.59	4.00	4.00

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